Bonus Problems - Math 544, Frank Thorne (thorne@math.sc.edu)

Due Monday, September 21, 2015

1. It was claimed in lecture that the only subspaces of $\mathbb{R}^2$ are $\{\vec{0}\}$, lines through the origin, and $\mathbb{R}^2$ itself.

   Prove this.

2. Do 12 and 13 of Ch. 2.4, B. Prove your claims. (See the top of p. 212 for the relevant definition.)

3. Let V be the vector space of all functions from $\mathbb{R}$ to $\mathbb{R}$. Describe, in a simple and familiar way, the subspace of V spanned by the functions $f(x) = (n + x)^n$ for all positive integers $n \geq 1$.